BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 96-1	)
	)
OLYMPIC PIPE LINE COMPANY:	)
CROSS CASCADE PIPELINE PROJECT	)
	)
	)

EXHIBIT _____ (KC - RT5)

REBUTTAL TESTIMONY OF KATY CHANEY

ISSUE: WETLANDS AND VEGETATION

SPONSOR: OLYMPIC PIPE LINE COMPANY

R. State your name.

A. Katy Chaney

Q. What topics will you address in your rebuttal testimony?

A. My rebuttal testimony is intended to respond to all of the testimony filed concerning environmental or land use impacts related to the project, and the mitigation of those impacts. My rebuttal testimony will address the following topics:

(1) Olympic's approach to environmental assessment and mitigation;

(2) Visual Impacts;

(3) Noise Impacts;

(4) Geotechnical hazards;

(5) Stream Crossings, Water Quality and Water Resources;

(6) Fish, Wildlife and Endangered Species

(7) Wetlands and Vegetation;

(8) Recreation;

(9) Land Use, including Agriculture.

For the Council's convenience, my rebuttal testimony has been divided into several different exhibits, organized roughly according to the likely organization of the adjudicatory proceedings. This exhibit addresses wetlands and vegetation.

Wetlands

Q. Did Dames & Moore evaluate the presence of and potential impacts to wetlands in the vicinity of the pipeline route?

A. Yes. Dames & Moore prepared an extensive two-volume wetland report in 1997. The data has been updated by the information in the May 1998 Application

Q. How did you determine the presence of wetlands along the pipeline route?

A. Dames & Moore biologists made wetlands determinations using the Army Corps of Engineers (Corps) Wetlands Delineation Manual (1987) for identifying and delineating jurisdictional wetlands. Using the definition from the manual, wetlands are defined as:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Q. What are the criteria used for determining whether something is a wetland?

A. The methodology for wetland delineation is based on the presence of three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation consists of those plant species adapted to grow in water, saturated soil, or on a substrate that at least periodically lacks oxygen. Hydric soils are saturated, flooded or ponded long enough during the growing season to become deoxygenated in the upper soil horizon. Wetland hydrology includes seasonal, periodic or permanent inundation, or soil saturation, which create anaerobic conditions in the soil for a sufficient portion of the growing season to engender development of hydric soils.

Q. Was this criteria always used to determine wetland presence?

A. In most cases, the routine method described in the Corps manual was used to identify and delineate wetlands along the route. In some cases, however, this was not possible. There are areas along the route where access was not granted during pipeline design and right-of-way negotiations. In these latter cases, delineations were conducted off-site using aerial photographs, NWI maps, and soil surveys.

Q. Did you collect any data before the field work was conducted?

A. Yes. Dames & Moore reviewed existing information to gain specific background knowledge and to identify the potential for wetlands to occur on the project site. Documents reviewed as part of the present study included:

- King County Wetland Inventory, 1990
- Snohomish County Stream and Wetland Survey Map Atlas, 1990
- USDA Soil Conservation Service (SCS), Soil Survey of King County Area (1973), Snohomish County (1983), and Grant County, Washington, (1984)
- Department of Natural Resources and SCS soils maps for Kittitas County (unpublished)
- USDA SCS soils maps of Franklin County (unpublished)
- USDA SCS, Hydric Soils of the United States, 1991
- USDI U.S. Fish and Wildlife Service, National Wetland Inventory Maps
- USGS Geological Topographic Survey Maps, 7.5 minute quadrangles
- Aerial photographs of June 27 and August 25, 1995, 1:7200 scale
- Topographic maps with a 10 foot contour interval

Q. When was the field work performed for wetlands and how was it performed?

A. Dames & Moore biologists conducted wetland field work between August 1995 and April 1997 for the initial route. Additional work was performed as minor changes were made to the route. The routine on-site determinations methodology described in the Corps manual was used except at those sites where on-site work was not possible. Access has been obtained to all but three of the areas along the proposed pipeline route which may contain wetlands. Two of the sites for which access has not been obtained are in King County, in Section 34, Township 26 North, Range 07 East (approximately 1/2 mile southeast of the Harris Creek crossing at MP 19.8) and in Section 14, Township 25 North, Range 07 East (approximately 1/4 mile northwest of the Tolt River crossing at MP 23.4). The MP 19.8 site does contain a wetland, number 260734. This

wetland was mapped based on aerial photograph interpretation and assessed by visiting the off-site portion of the wetland to the northeast. The MP 23.4 site has no mapped topographic depressions or features on aerial photographs to suggest the presence of wetlands, and it can be further assessed after an agreement is reached with the landowner. If a wetland does exist on the site, and it cannot be avoided, an amended application will be submitted.

In one other case, permission was not granted to access a site with a known wetland, number 152806A. This wetland is in Section 6, Township 15 North, Range 28 East, and was assessed from the highway right-of-way, approximately 40 feet from the crossing location. Dames & Moore biologists identified wetlands in a 200-foot-wide corridor (i.e., 100 feet on each side of the proposed centerline). A 200-foot-wide corridor was evaluated to allow for minor routing changes. The typical construction right-of-way width is 60 feet. At trenched stream and wetland crossings the construction right-of-way will be narrowed to a maximum width of 30 feet. Several river and stream crossings will be accomplished by drilling underneath the water body or by suspending the pipeline from a bridge. Staging areas for drilling and the locations of the pump stations and the terminal at Kittitas were also examined for the presence of wetlands. Therefore, the area studied in the field adequately assesses the area potentially affected by the proposed pipeline.

Q. How did you sample the sites in the field to determine whether the three criteria were present?

A. At each prospective wetland area, sample plots were established. These plots typically covered the plant community located within a 12 foot radius and a soil pit. Plots were selected both in areas where vegetation indicated a likelihood of a wetland and in areas outside the wetland boundary. All plots were sampled for vegetation, soils, and hydrology. Wetland boundaries were determined in the field based on plot data, visual observations, and aerial photograph interpretation. Wetland boundaries, unique identification numbers, plot locations, and wetland

classification (Cowardin et al., 1979) were marked on digital orthophotos in the field. The Cowardin method is a system of classifying wetlands based on their ecological system (e.g., estuarine, riverine, or palustrine) and their dominant vegetation (e.g., forested, scrub/shrub, or emergent). This classification system should not be confused with the categorization system developed by WDOE to rank wetlands by their relative value.

Each wetland identified was given a unique number based on the Township, Range, and Section in which the wetland is located. Although legal descriptions are usually listed as Section, Township, Range, this method was chosen to allow for the rapid location of any wetland on a map along this very long corridor. In cases where more than one wetland lies within the study area in a given Section, the wetlands were given an alpha character in addition to the six digit number. For example, two wetlands located in Section 21, Township 18 North, Range 12 East, would be labeled 181221A and 181221B. Route maps showing the location of wetlands are shown in Appendix A to the Wetlands Report. Wetland determination data were recorded on field sheets for each plot, and these data sheets are presented in Appendix B to the Wetlands Report. Specific sampling methodologies for each of the three criteria are described in further detail in the following paragraphs.

Q. How did you determine the existence of wetland vegetation?

A. The sample plots had approximately a 12-foot radius whenever possible. Smaller plots were sampled if the plant community had less than a 12-foot radius. Percent cover was estimated for each plant species present in the plot and the dominant species were determined. A plant indicator status, designated by the United States Fish and Wildlife Service (USFWS), was assigned to each dominant species and a determination was made as to whether the vegetation in each plot was "hydrophytic" (Reed, 1988, 1993). To meet the hydrophytic vegetation criteria, more than 50 percent of the dominant species must be hydrophytic. Plant species were considered hydrophytic when their indicator status was obligate wetlands (OBL), facultative

wetland (FACW), or facultative (FAC). Indicator categories and hydrophytic vegetation classifications are defined in Table 1.

TABLE 1
PLANT SPECIES WETLAND INDICATOR CATEGORIES

Indicator Category	Occurrence	Estimated Probability in Wetland
OBL	Obligate. Occur almost always in wetlands under natural conditions.	> 99%
FACW	Facultative wetland. Usually occur in wetlands, but occasionally found in uplands.	67-99%
FAC	Facultative. Equally likely to occur in uplands and wetlands.	34-66%
FACU	Facultative upland. Usually occur in uplands, but occasionally found in wetlands.	1-33%
UPL	Upland. Occur in wetlands in another region, but occur almost always under natural conditions in uplands in this region.	< 1%

Q. How did you determine the presence of wetland soils?

A. Dames & Moore biologists sampled soils in each plot and evaluated them for hydric indicators. Soil pits were typically dug to a depth of 18 inches. Soil characteristics including texture, color, and hydric soil indicators were recorded on field data sheets. Hydric indicators include low soil matrix chroma, mottles, and gleyed soils. Mottles are spots or blotches of contrasting color occurring within the soil matrix. Gleyed soils are predominantly neutral gray in color. A chroma of 2 (occurring with mottles) or less (with or without mottles) is considered to be indicative of a hydric soil (Corps, 1987). We compared soil characteristics to the Natural Resources Conservation Service (NRCS) descriptions of mapped soils to confirm the mapping. Most soils mapped by NRCS include areas of other soils (inclusions) which may comprise from 2 to 50 percent of the mapped unit.

Q. How is the hydrology criteria determined?

A. Direct observations of hydrology (i.e. inundation and soil saturation) are often limited during the dry season, but indicators may be present throughout the year that confirm the occurrence of saturation or inundation for periods of time which satisfy criteria designated by the Corps manual. Indicators include oxidized root channels associated with live roots and rhizomes, visible sediment deposits on substrate and plant surfaces, and water-stained leaves. The presence or lack of indicators of hydrology were recorded on the data sheets for each plot.

Q. What did you do with the results of the sampling?

A. Sampling results for the three parameters (vegetation, soils, and hydrology) were analyzed to determine whether or not each plot was a wetland. If the analysis indicated a wetland was present, an overall assessment of the wetland area was conducted. The wetland boundaries were determined in the field based on plot information, visual observations, and aerial photograph interpretation. For areas where on-site determinations were not possible because access was denied by the landowner, best professional judgment was used to map wetlands after observing the site from the closest location and/or reviewing the aerial photography.

Q. How did you record the data?

A. Dames & Moore collected data in the field using registered orthophotographs enlarged to a 1:3000 scale. These enlargements were used so that fixed reference points could be identified in the field and wetland boundaries could be accurately mapped on the orthophotographs. Using the orthophotos, the wetland locations were digitized into a Geographic Information System (GIS). The acreage of direct impacts to wetland areas is shown in Section 4.3, Table 4 of the Wetland Report.

Q. In addition to locating the wetlands, did you consider the functional value of the wetland?

A. Yes. At each wetland, functional values were assessed and the wetland category determined. Wetland functional values assessed in the field included water quality improvement, flood flow alteration, biological support, groundwater recharge and discharge, and aesthetics and recreation. Although wetland ratings under local ordinances may vary, category ratings for these wetlands were determined using the WDOE Wetlands Rating System for Eastern Washington (1991) and the Wetlands Rating System for Western Washington (1993). The WDOE wetland rating systems place the wetlands in four categories.

Q. Can you describe the different types of wetland values?

A. Category I wetlands are of the highest quality. Generally, these wetlands are not common and make up a small percentage of the wetlands in the state. These are wetlands that: 1) provide a life support function for threatened or endangered species that has been documented, and the wetland is on file in databases maintained by state agencies; 2) represent a high quality example of a rare wetland type; 3) are rare within a given region; or, 4) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime, if at all. Category II wetlands occur more commonly that Category I wetlands, but still need a high level of protection. These wetlands are those that: 1) provide habitat for very sensitive or important wildlife or plants; 2) are either difficult to replace; or 3) provide very high functions, particularly for wildlife habitat.

Category III wetlands also provide important functions and values. They provide habitat for a variety of wildlife species and occur more commonly throughout the state than either Category I or Category II wetlands. Generally, Category III wetlands are smaller, less diverse, and/or more isolated in the landscape than Category II wetlands. They are also frequently difficult to replace, and need a moderate level of protection.

Category IV wetlands are the smallest, most isolated, and least diverse wetlands in terms of vegetation and habitat values. These wetlands more easily replaced and, in some cases, may be improved from a habitat or native vegetation standpoint. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands do provide important functions and values, and should to some degree be protected. Because the criteria for Category IV wetlands are narrowly drawn, these wetlands are not common in most regions of the state.

Q. Has the US Army Corps Of Engineers verified the wetland boundaries?

A. Yes, wetland boundaries were flagged and verified by Corps staff. Olympic proposed that surveying of wetland boundaries not occur at this stage in the process, and Corps staff agreed. The wetland boundaries that were drawn on the digital orthophotos were used to generate maps of each wetland.

Q. Are there other Dames & Moore personnel who have additional information on the wetland surveys?

A. Yes, Dr. David Every participated in some of the survey work and directly supervised the Dames & Moore staff who conducted the surveys. Dr. Every is filing rebuttal testimony concerning wetlands.

Vegetation

Q. Does the Application include a vegetation study?

A. Yes, Dames & Moore conducted a vegetation study as part of this project, and prepared a vegetation report that describes the results of the study. Included in the study was an analysis of upland plant communities that occur along the proposed route, an assessment of potential impacts to these plant communities and identification of mitigation measures to be implemented, and a rare plant (and unique plant community) survey. This report addresses upland vegetation only.

The information regarding upland vegetation was updated and included in the revised Application.

Q. Have surveys been performed along the route for upland vegetation?

A. Yes, Dames and Moore conducted vegetation surveys in the study area every spring and summer since 1995. We conducted a preliminary study in the summer of 1995. At that time, we mapped plant communities on aerial photographs and conducted limited field sampling to verify the mapping. We also collected and reviewed resource agency publications, and contacted agency personnel to determine potential rare plant locations. We conducted a subsequent vegetation study in the spring and summer of 1996 to map the coniferous forest and shrub-steppe plant communities in greater detail and to identify and map rare plant locations along the proposed route.

In spring of 1997, we conducted vegetation studies along the alternative alignments for the Columbia River crossing, the alternative alignment on the Yakima Training Center (along the south side of I-90), the Corfu re-route (approximate mile post 175-181), and the re-route to the northwest of the town of Kittitas (approximate mile post 106-113). During these surveys, we mapped plant communities and we conducted rare plant surveys. Olympic has made some route revisions in negotiations with landowners and regulatory agencies. In spring 1998, we conducted vegetation studies along those route segments that had changed since the previous field surveys were completed.

Q. You mentioned the "study area". How do you define that area?

A. The following defines the corridor widths as used in this report:

- The **study area** refers to an area ½-mile-wide centered on the proposed route.

- The **study corridor** refers to a 200-foot-wide swath centered on the proposed pipeline route (i.e., 100 feet to each side of the proposed pipeline route).
- The **construction corridor** refers to the area which will be cleared and graded during pipeline construction (usually 60 feet wide in areas composed of upland vegetation).
- The **maintained right-of-way** refers to the area which will be kept clear of large, woody vegetation (in areas composed of upland vegetation, the maintained right-of-way will be a 30-foot-wide swath centered over the pipeline).

Q. What work was done before going out into the field?

A. Prior to conducting any field work, Dames & Moore biologists and ecologists reviewed publications, aerial photographs and maps to determine the upland plant community types that would be expected to occur in the study area. Publications reviewed for this project include Natural Vegetation of Oregon and Washington (Franklin and Dyrness 1988) and Steppe Vegetation of Washington (Daubenmire 1970). Based on the data review as well as knowledge of the study area, a list of plant communities expected to occur in the study area was produced. This list was revised during vegetation studies conducted in the spring and summer of 1996 in order to better describe the coniferous forest and shrub-steppe plant communities occurring within the study area (coniferous forest and shrub-steppe are the two most common and diverse vegetation types occurring along the proposed route).

Q. Did you consult with the federal agencies before you conducted the field work?

A. Yes, agency consultation was done to ensure that applicable protocols, paperwork, and standards and guidelines are followed on federal land. Dames & Moore and

Olympic Pipe Line met with the U.S. Forest Service (USFS) and discussed procedures for field survey and documentation. The USFS provided species lists, reference materials, and examples of report write-up formats. Dames & Moore and the USFS staff met in the field to discuss and identify the least environmentally damaging alignment on USFS land. Dames & Moore has consulted with and received information from the U.S. Army (for Yakima Training Center land), the Bureau of Land Management, the Bureau of Reclamation, and the U.S Fish and Wildlife Service to ensure that all applicable procedures are followed.

Q. What areas of the route were surveyed for upland vegetation?

A. The following lists the segments of the route which have been included in the vegetation field studies:

- shrub-steppe habitats (vicinity of Yakima River to the end of the route);
- forest habitats on Bureau of Land Management and Forest Service (Mt. Baker-Snoqualmie National Forest and Wenatchee National Forest) land; and
- any other areas outside of existing easements or trails that consist of natural, non-weedy vegetation (these route segments are identified in Appendix A (Map Atlas) of the EFSEC application as "New Corridor").

Q. Were there areas along the route that were not surveyed?

A. Yes, vegetation studies were not conducted along BPA easements or on agricultural land in the Puget lowlands because these areas are easily mapped by aerial photograph interpretation and are unlikely habitats for rare plants.

Q. How did you document the findings of the field survey?

A. Plant communities were mapped based on field work, aerial photograph interpretation, and agency GIS databases. In the field, botanists compared plant community mapping with the vegetation occurring in the study corridor. Plant community types and boundaries were confirmed or corrected as necessary. Field verification of mapped plant communities was conducted primarily within the 200-foot-wide study corridor. In some areas, it was not possible to see the entire ½-mile-wide study area from the proposed pipeline location (e.g., densely forested areas). In these areas, mapping relied heavily on aerial photograph interpretation and on agency databases. Mapping of old-growth forest beyond the 200-foot-wide study corridor was based primarily on the Priority Habitats and Species Geographic

Information System (GIS) coverage from Washington Department of Fish and Wildlife. Field surveys were conducted to ensure that old-growth forest is avoided.

Plant communities occurring in the study area were mapped in the GIS from digital aerial photographs of the proposed route. Limited field sampling was conducted prior to submitting the EFSEC application to verify the accuracy of the mapping. Based on the field studies conducted in 1996, the plant community mapping was refined and corrected as necessary in the GIS. Plant communities mapped during the spring 1997 and 1998 field survey were mapped on orthophotos and then digitized into the GIS.

Q. Are there other Dames & Moore personnel who have additional information on the vegetation surveys?

A. Yes, Dr. David Every participated in some of the survey work and directly supervised the Dames & Moore staff who conducted the surveys. Dr. Every is also submitting rebuttal concerning Upland Vegetation.

DATED: March 24, 1999

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Katy Chaney